

Patent

REMARKS

The Applicants would like to bring to the Examiner's attention that Claim 13 was cancelled in the Preliminary Amendment filed 4-8-98. Hence, claims 1-12 and 33-46 are pending.

Claims 33,36,37 and 38 are rejected under 35 U.S.C. 102(e) as being anticipated by Boger et al. Boger relates to the application of moistureproof insulating coatings to electronic circuit boards and more particularly to an apparatus and method for carrying out such coatings. (See column 1, lines 32-35.) The coatings, known as conformal coatings, are preferably formed from acrylic, polyurethane, or epoxy resins dissolved in a volatile solvent. "When applied to clean printed circuit boards, an insulative resin film of uniform thickness, without pinholes is formed from this material as the solvent evaporates on a continuous basis." (See column 1, lines 54-65.) Exemplified are two materials having a viscosity of 300 CP and 750 CP. The method employs a coating means of an elongated slot nozzle die having an elongated slot outlet for generating a film of coating and parallel slot openings juxtaposed to the slot outlet for blowing air onto the extruding film.

The present invention differs from the method of Boger et al. in several respects. Whereas the method of Boger et al. employs solvent based materials, the present invention employs molten thermoplastic materials such as hot melt adhesives. The Applicants acknowledge that at column 7, lines 30-33, this reference suggests the use of a hot melt coating material. However, the declaration submitted concurrently with this response attests to the fact that it is not possible to obtain a continuous film at low coat weights by coating a molten thermoplastic material in accordance with the method of Boger et al. Claim 33 has been amended to reflect the fact that the film is produced from a molten hot melt adhesive and that the resulting film has a low coating weight.

Secondly, the method of Boger et al. is believed to be useful with a wide range of coating materials of different viscosities. (See column 10, lines 49-51)

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Exemplified are two materials having a viscosity of 300 CP (3 poise) and 750 CP (7.5 poise). The present invention requires a molten thermoplastic material having specific viscosity parameters, namely that the complex viscosity at the coating temperature is less than about 500 poise at about 1000 radians/second and from about 100 poise to about 1,000 poise at about 1 radian/second. At p. 9, line 31 to p. 10 line 4 and p. 12, lines 27-32 of the present application for patent, the Applicants have demonstrated the importance of viscosity to the method of the present invention. Since viscosity is typically a low shear measurement (unless reported otherwise), the exemplified materials of Boger et al. are unsuitable for use in the present invention since the complex viscosity is considerably lower than 100 poise at a low shear rates.

Thirdly, the method of Boger et al. employs a coating means having an elongated slot nozzle die and an impinging flow of air. The present invention employs a coating device consisting essentially of a slot nozzle. Claim 43 has been added reciting this feature. Support for claim 43 is found on p. 6, line 9 - p. 7, line 3.

The remaining rejections set forth by the examiner rely on secondary references in combination with Boger et al. However, since neither the secondary references nor the method of Boger et al. teach or suggest the essential features of the invention as set forth by the independent claims, combining Boger et al. with the secondary references does not overcome the deficiencies of Boger et al.

Claims 44 - 46 have been added to recite preferred embodiments of the present invention in independent form. Claim 44 is supported by original claim 33 and p. 6, line 9 to p. 8, line 29 of the specification. Claims 46-47 are supported by original claims 1 and 10 and by the specification at p. 6, line 9 to p. 8, line 29; p. 9, lines 9-15; and p. 10, lines 5-10.

The Applicants respectfully request withdrawal of the rejections and a timely allowance of the claims. If any further issues remain, the Applicants

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respectfully request the Examiner to contact their representative for an interview prior to issuing a final rejection.

Respectfully submitted,

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